

# **Quality of Pipe-Borne Water in an Urban Environment: A Case Study of Western Accra**

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The rationale for the research was to assess the quality of treated water supplied to the western part of Accra by the Weija Headworks. The quality of water treated at the headworks before distribution and that of selected households were assessed. In all, one hundred and thirty-five (135) samples from twenty-seven (27) sites were analysed. One hundred and twenty (120) stored water samples from reservoirs in selected households in the study area were also investigated.

The quality of water from the Headworks, in terms of physico-chemical and bacteriological characteristics was generally good (by WHO and GWCL guideline). Though there were sufficient quantities of residual chlorine in treated water from the Headworks, concentrations decreased with relative distance from the Headworks. The absence of coliform bacteria in treated water at the Headworks could be attributed to the effective and efficient treatment processes employed.

Physico-chemically, quality of piped water in selected districts (Bortianor, Accra North-West 1 and Accra West) was good by WHO and GWCL standard. However, total coliform bacteria (range 0-120 cfu/100ml) were detected in about three quarters of tap water samples in the study area while faecal coliforms (range 0-10 cfu/100ml) were detected in about a quarter. This was attributed to the introduction of coliform-infected water into the distribution system as a result of pipe breakages and negative pressures (resulting from water rationing) in the study area.

For water samples collected from household reservoirs, physico-chemical parameters measured were well within WHO and GWCL guideline. However, more than half of samples collected had total coliform bacteria present (range of 0-40 cfu/10ml) while faecal coliforms (range 0-25 cfu/100ml) were detected in about a quarter.

Stored water sampled from polyethylene reservoirs were found to have less coliform bacteria compared to that stored in metallic and cement reservoirs. Access to water in reservoirs was observed to be the main reason behind the differences in quality. Most polyethylene reservoirs had narrow openings and taps fitted to them, making direct access to stored water difficult thus a reduction in contamination. Though some cement and metallic reservoirs had taps fixed to

them wide openings at the top made it possible for foreign materials like cups and buckets to be dipped into them, contaminating the water in the process.

A social survey conducted in the study area indicated that majority of residents in the study area depended largely on piped water for their daily activities. About 38.5% were indifferent in terms of perception about the quality of water supplied to them, while 31.2% were of the opinion that the quality of water was good. Their perception on quality was mainly based on colour and taste of the water. About 85% of residents stored water mainly to cater for shortages and tap closures. Bacteriologically the quality of piped and stored water in the Districts was generally poor by WHO and GWCL standards. It is recommended that GWCL will ensure that adequate free chlorine is maintained in the distribution system so as to preserve water to the farthest township relative to the Headworks.

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